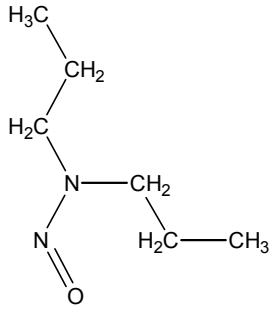
N-NITROSODI-*n*-PROPYLAMINE
CAS No. 621-64-7

First Listed in the *Second Annual Report on Carcinogens*



CARCINOGENICITY

N-Nitrosodi-*n*-propylamine is *reasonably anticipated to be a human carcinogen* based on sufficient evidence of carcinogenicity in experimental animals (IARC S.4, 1982; IARC V.17, 1978). When administered to rats in the drinking water, *N*-nitrosodi-*n*-propylamine induced carcinomas of the liver and the tongue, and papillomas and carcinomas of the esophagus. When administered to rats by subcutaneous injection, the chemical induced neoplasms of the nasal and/or paranasal cavity, liver tumors (mainly carcinomas), adenomas and carcinomas of the lung, and squamous cell papillomas of the esophagus. Subcutaneous injection also induced adenomas and one adenocarcinoma of the kidney in rats of each sex, and neoplasms of the nasal and paranasal cavities, laryngobronchial tract, and lung in hamsters of both sexes (IARC V.17, 1978).

There are no adequate data available to evaluate the carcinogenicity of *N*-nitrosodi-*n*-propylamine in humans.

PROPERTIES

N-Nitrosodi-*n*-propylamine is a yellow liquid that is water soluble. It is soluble in organic solvents and lipids. It is sensitive to light, especially to ultraviolet light, and undergoes photolytic degradation. When heated to decomposition, it emits toxic fumes of nitrogen oxides (NO_x). It is oxidized by strong oxidants to corresponding nitramine. It can be reduced to the corresponding hydrazine and/or amine. It is resistant to hydrolysis.

USE

There are no known commercial uses of *N*-nitrosodi-*n*-propylamine (IARC V.27, 1978). Its use in cancer research is limited.

PRODUCTION

The Chem Sources USA directory identified one producer and nine suppliers of *N*-nitrosodi-*n*-propylamine in 1986 (Chem Sources, 1986). No import or export data were

available. The 1979 TSCA Inventory identified two U.S. producers of *N*-nitrosodi-*n*-propylamine in 1977, with an estimated production of 500 lb (TSCA, 1979).

EXPOSURE

The primary routes of potential human exposure to *N*-nitrosodi-*n*-propylamine are inhalation, ingestion, and dermal contact. The general population may possibly be exposed sporadically to low levels of *N*-nitrosodi-*n*-propylamine as a contaminant of wastewater from chemical factories, in cheese, in brandy and other liquors, and in pesticides (IARC V.27, 1978). The potential for exposure to *N*-nitrosodi-*n*-propylamine is greatest for pesticide workers and research personnel. *N*-Nitrosamines are frequently produced during rubber processing and may be airborne in the workplace. They may also be present as contaminants in the final rubber products. Potential exposure depends on the ability of the nitrosamines to migrate from the product and enter the body. Significant levels of *N*-nitroso compounds have been identified in a number of materials including pesticides, cosmetics, cutting fluids, and fire resistant hydraulic fluids. The *N*-nitroso compounds found in these products were apparently formed in situ during storage or handling as the result of a reaction between amines present in the mixture and inorganic nitrite, which may have been added as a corrosion inhibitor (CHIP, 1978). There were no data available on the number of people possibly exposed. Additional exposure information may be found in the ATSDR Toxicological Profile for *N*-Nitrosodi-*n*-propylamine (ATSDR, 1989e).

REGULATIONS

EPA regulates *N*-nitrosodi-*n*-propylamine under the Clean Water Act (CWA), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Resource Conservation and Recovery Act (RCRA), and Superfund Amendments and Reauthorization Act (SARA). Under CWA, EPA has established water quality standards for discharging this chemical from any point source. EPA established a statutory reportable quantity (RQ) of 1 lb for *N*-nitrosodi-*n*-propyl-amine under CERCLA but adjusted the RQ to 10 lb based on new information. *N*-Nitrosodi-*n*-propylamine is subject to reporting/recordkeeping requirements under RCRA and SARA. OSHA regulates *N*-nitrosodi-*n*-propylamine under the Hazard Communication Standard and as a chemical hazard in laboratories. Regulations are summarized in Volume II, Table B-103.